Ontario

Ministry of Agriculture and Food

Biosolids Recycling
A Down to Earth Solution

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Introduction

Plant, animal and human wastes are a part of the natural cycle of life. These materials have valuable soil enhancing properties that should not be wasted.

In agriculture, soils typically require a yearly supplement of nutrients to support crop production. Across Ontario and around the world, farmers use biosolids to provide some of these nutrients.

Then land application of biosolids is a good practice that has been used in Ontario for many years. Each year, approximately 1.5 million cubic meters of biosolids are applied to agriculture land in the province. This amount would fill the SkyDome to a depth of 150 metres.

In the mid 1970's, the Biosolids Utilization Committee (BUC), a group with agricultural and environmental expertise, was established to develop quality standards for biosolids utilization on agricultural land. These standards can be found in the Guidelines for the Utilization of Biosolids and Other Wastes on Agricultural Land *(to see these guidelines please refer to section below)*. BUC now functions as an advisory body to the Ministries of the Environment, Health and Agriculture and Food, and has support from academia and agricultural and industrial organizations.

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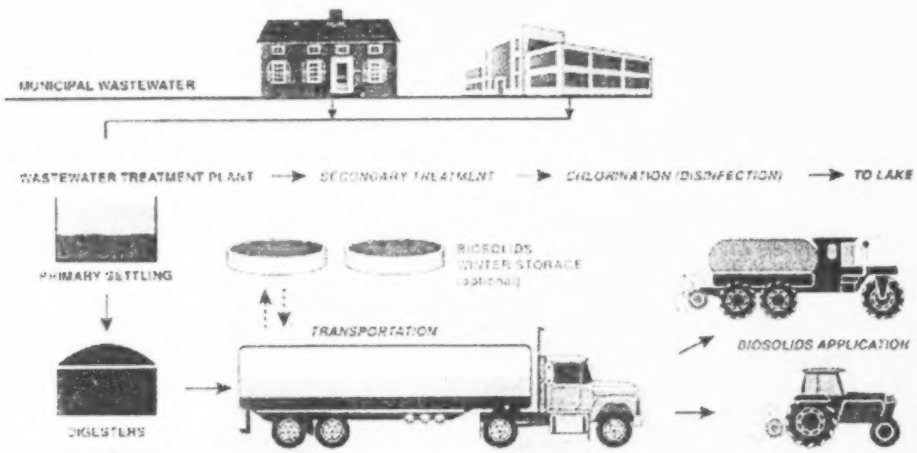
What are Biosolids?

Biosolids are nutrient-rich processed organic material derived from wastewater treatment. They contain mineral and organic nitrogen, phosphorous, potash, organic matter and micro-nutrients such as zinc, magnesium and copper, all important for plant growth.

Municipal wastewater treatment facilities separate the liquid and solid portions of wastewater for processing and treatment. The solid portion undergoes biological treatment during which organic material is digested or stabilized by micro-organisms. Today, greater quantities of biosolids than in the past meet the quality standards set by BUC and are therefore suitable for land application. The illustration below outlines the wastewater cleaning process.



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Why Use Biosolids?

Biosolids recycling offers an environmentally sound management alternative to disposal, thereby reducing the amount of material that would otherwise go to landfill or incineration.

Land application of biosolids:

- reduces demand for commercial fertilizers
- improves soil fertility
- enhances soil structure, moisture retention and soil permeability
- adds organic matter which reduces the potential for soil erosion and
- makes economic sense

Biosolids are ideal for crops such as corn, soybeans, canola and cereals and can also be benefit forage and pasture land. Biosolids can be used in forestry to encourage tree growth, and therefore timber production, or to rehabilitate soils affected by mining or quarrying.

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Best Management Practices

BUC supports sound management practices for biosolids utilization. Responsible management ensures

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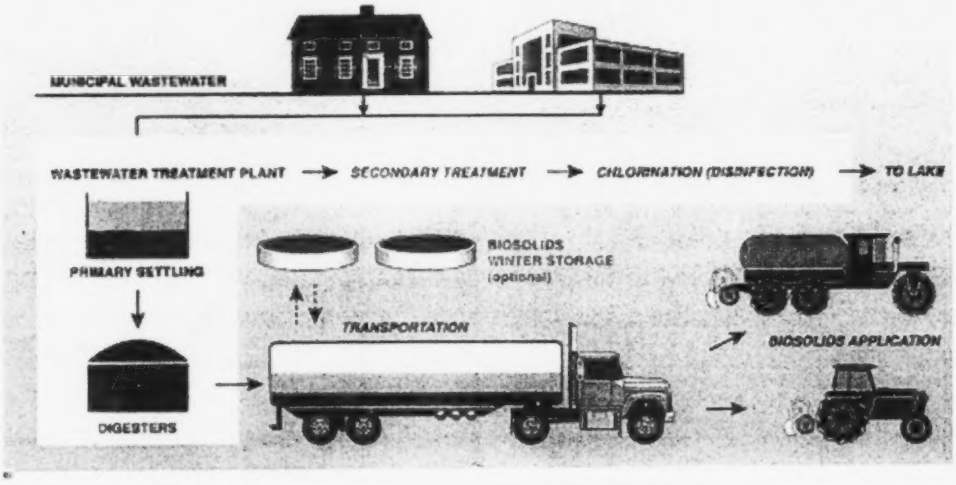

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Best Management Practices

BUC supports sound management practices for biosolids utilization. Responsible management ensures

biosolids application benefits crops without degrading the soil or risking the health of humans, livestock or plants.

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Biosolids Quality

Only high quality biosolids that conform to provincial standards are acceptable for application to agricultural land. Biosolids are analyzed regularly for nitrogen, phosphorous, metals and other properties.

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Site Suitability

Soil tests ensure suitability for biosolids application. Suitability is based on levels of phosphorous, metals and pH of the soil.

The guidelines require that:

- the land is suitably located within a specified distance from residences, wells and water courses, and
- the timing and method of application are appropriate for the specific site conditions and crop management.

Studies by the Ministry of Agriculture and Food confirm that repeated applications of biosolids over many years cause no harmful effects to the soil quality.

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Transportation and Field Application

Biosolids from wastewater treatment plants are transported and applied in accordance with the requirements of the Ministry of the Environment. The application rate is based on field soil tests, crop nitrogen requirements and guideline limits. Normally, a field would receive biosolids, once every five years.

BUC favours injection or rapid incorporation to conserve nitrogen, reduce odours and prevent runoff. The scene below depicts biosolids injection with a flexible drag hose system.

The supplier and contractor will work with the farmer to ensure that timing of the application is compatible with the farmer's overall crop management program. Mutual co-operation maintains satisfaction with the program and results in good land stewardship practices.

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Record Keeping

The guidelines require that records be kept of biosolids and soil quality, application rates, quantities applied and site location.

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Guidelines and Manuals

Please note that some of these links are to external sites.

- Guidelines for the Utilization of Biosolids and Other Wastes on Agricultural Land Publication #3425
- Guide to Applying for a Certificate of Approval to Spread Sewage and Other Biosolids on Agricultural Lands (Organic Soil Conditioning) Publication #3681

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Factsheets and Infosheets

- Land Application Of Sewage Biosolids For Crop Production *(Order No. 00-023)*
- Livestock Bedding Alternatives *(Order No. 97-029)*
- List Of Consulting Agronomists

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Research Papers

- Analytical Results, Findings and Recommendations of the 1995 OMAF Sewage Biosolids Field Survey
- Field Survey of Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans (PCDD/Fs) in Sewage Biosolids Treated Ontario Agricultural Soils

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Biosolids Utilization Committee

- Goals, Members and Newsletters of the Biosolids Utilization Committee

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